

## **REMARKS**

Favorable reconsideration and allowance of this application are requested.

### **I. Discussion of Claim Amendments**

The pending claims have been revised in the interests of clarity. In addition, the amended version of claim 1 clarifies that the process is a *multi-stage* Beckmann rearrangement of cyclohexanone oxime to form caprolactam. In addition, the cyclohexanone oxime that is fed to the first and second stage reaction mixtures is now recited to contain low water – i.e., *less than 1 wt.% water* – and is obtained by preparing an organic medium comprising cyclohexanone oxime dissolved in an organic solvent, and separating, by distillation, cyclohexanone oxime from the organic medium. Support for such an amendment may be found in the originally filed specification at page 3, lines 11-15.

Conforming amendments have also been made to the claims dependent on claim 1.

Claims 15-19 are new and are likewise based on the disclosure appearing in the original specification at page 3, lines 11-15.

Thus, upon entry of this amendment, claims 1-19 will be pending herein for consideration.

### **II. Response to 35 USC §103(a) Rejection**

Prior claims 1-12 attracted a rejection under 35 USC §103(a) as allegedly obvious, and hence unpatentable, over Smith (USP 3,953,438). As will become evident from the following discussion, Smith is inappropriate as a reference against the presently pending claims.

The applied Smith patent is of course referred to in the present application by way of background. In this regard, at the bottom of page 1, the subject application notes that:

*"...it is described that the oxime may contain up to 6 wt% water. Although a value of 0.1 wt. % water is mentioned as a lower limit, in fact, the process disclosed in [Smith] is carried out at high water content, i.e. in all the examples oxime containing 4.9 wt.% of water is used. No method is given how to reduce the water content of the oxime."*

Smith does not provide any suggestion at all of the benefits of the present invention, not only in respect of the yields of caprolactam, but also in respect of the improved purity of the caprolactam obtained according to the present invention. It is certainly no routine experimentation to arrive at the presently claimed invention, when starting from Smith. The skilled man would not be inclined to perform experiments with the low water contents of the cyclohexanone oxime (< 1 wt.%, preferably < 0.1 wt.%) and at the much lower use of SO<sub>3</sub>.

The Examiner is invited to re-read the experimental evidence presented in the present application, which evidence is believed to be quite probative to the issue of *unobviousness* of the present claims. In particular:

- Example 1 shows obtaining cyclohexanone oxime containing less than 1000 ppm water which is then used in Examples 2-4. Examples 2-4 are performed as in Comparative Experiment A, but at different water content of the cyclohexanone oxime.
- Comparative Experiment A uses cyclohexanone oxime containing 4.7 % water.

The experimental results of Examples 2-4 in comparison to the results of Comparative Experiment A are clear evidence for the *unobviousness* of the present invention. Specifically,

- In Comparative Experiment A significantly worse results are obtained (namely: overall yield of the 3-stage rearrangement 98.9 %; extinction at 290 nm 3.54).
- The overall yield in the Examples is respectively 99.4 %, 99.5 % and 99.3 %: the extinction at 290 nm in the Examples is respectively 0.65, 0.38 and 1.06.

Thus, applicants suggest that the presently claimed process is not rendered obvious under 35 USC §103(a) from the applied Smith reference. Withdrawal of such rejection is therefore in order.

### **III. Information Disclosure Statement**

The Examiner's attention is directed to commonly owned and copending U.S. patent application Serial No. 10/557,771 ("the '771 application") in as much as it may be deemed related to the present application. Fortunately, Examiner Kifle is examining both the subject application and the '771 application.

An Official Action was recently issued on June 22, 2007 in the '771 application which cited U.S. Patent No. 3,914,217 to Smith ("Smith '217"), already of record herein. A copy of the June 22, 2007 Official Action may be viewed at the USPTO's PAIR system at

[http://portal.uspto.gov/external/portal/tut/p/kcxm1/04\\_Sj9SPykssy0xPLMnMz0vM0Y\\_QjzKLN4qPMATJgFieAfgRqCLGpuqijinABX4\\_83FT9IKBEpDIQxNDCRz8qJzU9MbISP1jFWz9AvyA3NDSi3NsRAHxEBJg1/delta/base64xml/L0IJSk03dWIDU1IKSi9vQXd3QUFNWwWdBQ0VJUWhDRUVJaEZLQSEvNEZH2RZbktKMEZSb1hmckNIZGqvN18wXzE4TC](http://portal.uspto.gov/external/portal/tut/p/kcxm1/04_Sj9SPykssy0xPLMnMz0vM0Y_QjzKLN4qPMATJgFieAfgRqCLGpuqijinABX4_83FT9IKBEpDIQxNDCRz8qJzU9MbISP1jFWz9AvyA3NDSi3NsRAHxEBJg1/delta/base64xml/L0IJSk03dWIDU1IKSi9vQXd3QUFNWwWdBQ0VJUWhDRUVJaEZLQSEvNEZH2RZbktKMEZSb1hmckNIZGqvN18wXzE4TC)

8zL3NhLmdlEJpYq!!?selectedTab=ifwtab&isSubmitted=isSubmitted&dosnum=10557771&public\_selectedSearchOption=.

A form listing the '771 application is attached for the Examiner to initial and date evidencing consideration of the same during prosecution of the subject application.

The appropriate fee required by Rule 97(c) is also being paid concurrently herewith.

#### **IV. Conclusion**

All issues raised in the Official Action are believed to have been addressed by the amendments and comments above. Accordingly, early receipt of the Official Allowance Notice is awaited.

#### **V. Fee Authorization**

The Commissioner is hereby authorized to charge any deficiency, or credit any overpayment, in the fee(s) filed, or asserted to be filed, or which should have been filed herewith (or with any paper hereafter filed in this application by this firm) to our Account No. 14-1140.

Respectfully submitted,

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